PATENT APPLICATION
Mo4532
LeA 31,223

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION OF	)
	) GROUP NO.: 1711
FRANK RICHTER ET AL	)
	)
SERIAL NUMBER: 08/713,905	) EXAMINER: R. SERGENT
	)
FILED: SEPTEMBER 13, 1996	) RESPONSE TO PAPER NO. 13
	)
TITLE: PROCESS FOR THE PRODUCTION OF ETHER ISOCYANATES	)

REPLY BRIEF

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

In response to the Examiner's Answer dated May 13, 1998, Appellants wish to address several points raised therein.

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231 on 7/13/98
Date

Lyndanne M. Whalen - Reg. No. 29,457

Name of applicant, assignee or Registered Representative

Signature

July 13, 1998

Date

REMARKS

1. Statements made in Appellants' specification with respect to the prior art and the advantages of the invention over that prior art do provide proper support for Appellants' hydrolyzable chlorine content claim limitation.

At page 4, lines 1-5 of his Answer, the Examiner argues:

> Despite appellants' argument, the position is taken that statements within the specification pertaining to the prior art and the hydrolyzable chlorine content of the prior art cannot provide support for claim limitations pertaining to the hydrolyzable chlorine content of the instant invention.

Appellants submit that this position is not supported by any authority. In fact, the Examiner's position is contrary to the Board of Patent Appeals and Interferences' decision in Ex parte Porter, 25 U.S.P.Q. 2d 1144 (1992) in which it was held that the discussion of the relevant prior art in the specification did provide support for the invention being claimed.

The above-quoted position of the Examiner does not therefore provide a proper basis for the rejection of Appellants' Claims 3 and 4 under the 35 U.S.C. § 112, first paragraph description requirement.

2. Appellants' Examples must be read in context.

At page 4, lines 6-9 of his Answer, the Examiner argues:

> Furthermore, appellants' only disclosure of hydrolyzable chlorine contents for the instant invention stems from the examples; however, the disclosed amounts within the examples range from 24 to 48 ppm.

Appellants would direct the Board's attention to page 10, lines 25-26 of their specification. In this discussion of the results of the Comparative Examples, it is reported that in each of the Comparative Examples, "The residual chlorine content of the product was in no case below 0.1%." It is clear from this language and the discussion of the prior art in the Background of the Invention section of the specification that Appellants considered isocyanates having hydrolyzable chlorine

contents of 0.1% or higher to be outside the scope of their invention at the time their application was filed.

Appellants' Examples can **not** be read in isolation to determine whether Appellants were in possession of the claimed invention at the time their application was filed. Those Examples must be read in the context of the entire specification, **including** the discussion of the results achieved in Comparative Examples and the discussion of the prior art.

One skilled in the art reading their specification in its entirety would readily appreciate that Appellants considered isocyanates having a hydrolyzable chlorine content of 0.1% or higher to be outside the scope of their invention at the time they filed this application.

Appellants' specification does therefore satisfy the description requirement of 35 U.S.C. § 112, first paragraph.

3. The Examiner's argument with respect to motivation to combine the teachings of the four cited references does not satisfy the requirements for a proper rejection under 35 U.S.C. § 103.

At page 5, lines 14-23 of his Answer, the Examiner argues that the teachings of the secondary references with respect to increased yield would motivate one skilled in the art to phosgenate the ether amines of Lehmann et al in the vapor phase with the expectation of obtaining purer isocyanates and more economical processes.

Appellants submit that this argument is not supported by the teachings of the references themselves. The yields reported by Lehmann et al range from 65 to 81% of theoretical. The yields reported in Bischof et al range from 42 to 99% of theoretical (obviously not always higher than those reported by Lehmann et al). Not one of the references mentions hydrolyzable chlorine. Not one of the cited references discusses the economics of the process disclosed therein.

The Examiner has ignored the differences between the ether amines required in Appellants' claimed process and the amines used in the cited secondary references despite the teaching of Lehmann et al that any phosgenation of ether

amines (other than those required in the reference process) would produce high amounts of ether cleavage products instead of the desired isocyanates.

It is well established that motivation is not abstract but practical. In re Gyurik and Kingsbury, 201 USPQ 552 (CCPA 1979).

The "wish" to obtain higher yields, higher purity and a more economical process attributed to the skilled artisan by the Examiner is not, however, the practical motivation required to establish a proper *prima facie* case of obviousness based on the references selected by the Examiner.

4. The fact that an invention is not limited to the materials required by the prior art is relevant to the obviousness of an invention.

At page 6, lines 8-11 of his Answer, the Examiner argues that because Appellants' claims do not exclude the diamines of Lehmann et al, Appellants' argument that their process is not limited to the specific diamines taught by Lehmann et al to be critical is without merit.

This argument might have some merit **if** Lehmann et al taught gas phase phosgenation of the disclosed ether diamines. However, Lehmann et al does not.

The rejection of Appellants' Claims 1 and 2 is based on 35 U.S.C. § 103 (**not** § 102). The fact that processing details are substantially identical to those of a reference (in the present case, the secondary references) lends nothing to a rejection under § 103 absent a showing that it would have been obvious to substitute one starting material for another. Disclosure of a known relationship is not a disclosure of equivalency and is not sufficient to support a rejection under 35 U.S.C. § 103. In re Mercier, 185 USPQ 774 (CCPA 1975)

In the present case, no equivalence between the amines disclosed in the secondary references and the ether amines required by Lehmann et al has been established. In fact, Lehmann et al itself teaches that all ether polyamines are **not** equivalent.

The cited references do not therefore provide a proper basis for a rejection under 35 U.S.C. § 103.

5. Appellants' process of Claims 1 and 2 must be conducted under pressure.

At page 7, lines 3-5 of his Answer, the Examiner argues:

> However, appellants' claims are not limited to the use of elevated temperatures; appellants' claims allow for temperatures as low as 50°C.

This argument is made to support the Examiner's position that Lehmann et al would lead one skilled in the art to use a vapor phase phosgenation process.

Appellants would direct the Board's attention to the fact that unlike the Lehmann et al process, their claimed process must be carried out **under pressure**.

It is known that the measured boiling point of a substance is affected by the pressure at which the boiling point is measured. (See, e.g., the definition of boiling point given on the enclosed copy of page 90 taken from Grant & Hackh's Chemical Dictionary.) As stated in this discussion of boiling point, a reduction in pressure of only 10 mm will reduce the boiling point of water by 0.37°C.

Appellants' use of temperatures as low as 50°C in a process conducted under pressure does not therefore support the Examiner's argument that Lehmann et al's teaching of higher temperatures at ambient pressure would lead one skilled in the art to a gas phase phosgenation process.

For these reasons and those discussed in their Brief, Appellants continue to maintain that each of the Examiner's rejections is in error and respectfully request that each of these rejections be reversed and that Claims 1-4 be allowed.

Respectfully submitted,

FRANK RICHTER
JOSEF PEDAIN
KLAUS NATCHKAMP
ANDREAS FLINK

By ____________________
Lyndanne M. Whalen
Attorney for Appellants
Reg. No. 29,457

Bayer Corporation
100 Bayer Road
Pittsburgh, Pennsylvania 15205-9741
(412) 777-2347
FACSIMILE PHONE NUMBER:
(412) 777-5449
/vjt/LMW2859

GRANT & HACKH'S

CHEMICAL DICTIONARY

[*American, International, European and British Usage*]

Containing the Words Generally Used in Chemistry, and Many of the Terms Used in the Related Sciences of Physics, Medicine, Engineering, Biology, Pharmacy, Astrophysics, Agriculture, Mineralogy, etc.

Based on Recent Scientific Literature

FIFTH EDITION
Completely Revised and Edited by

ROGER GRANT

M.A., D. de l'U., Ph.D., C. Chem., M.R.S.C. *Consultant*

CLAIRE GRANT

M.B., B.S., M.R.C.P.E. *Medical Practitioner*

McGRAW-HILL BOOK COMPANY

New York St. Louis San Francisco Auckland Bogotá
Hamburg Johannesburg London Madrid Mexico
Milan Montreal New Delhi Panama
Paris São Paulo Singapore
Sydney Tokyo Toronto

made in a web on a continuous wire, as with paper, but with a greater thickness. **particle ~** (1) See *particleboard*. (2) Chipboard.

b. foot A unit of volume of boards sawn from logs, equal to the volume of a b. 1 in thick and 1 ft² in area; i.e., $\frac{1}{12}$ ft³. Cf. *cunit, cord*.

Board of Trade unit B.T.U. Former British unit of electric energy. 1 B.T.U. = 1 kWh. Cf. *British thermal unit*.

boart Bort.

Boas reagent A solution of 5 g resorcinol and 3 g sugar in 100 g dilute alcohol. A test for hydrochloric acid in gastric juice: a rose-red color develops on boiling.

boat A small, elongated vessel of porcelain, quartz, tantalum, or platinum which can be inserted in a combustion tube. **b. conformation** See *conformation*.

bobierite $Mg_3P_2O_7 \cdot 8H_2O$. A native, crystalline phosphate in guano.

Bobina rayon Trademark for a viscose synthetic fiber.

Bobol Trademark for a viscose synthetic fiber.

B.O.D. Biochemical oxygen demand.

bodies (1) Biochemical substances of similar structure. (2) Cellular structures in protoplasm. **acetone ~** Substances, as, acetone, acetoacetic acid, or 2-hydroxybutanoic acid, in urine. **alloxur ~** A compound of uric acid and alloxan, secreted in the urine; as, the purine b. **Buchner ~** A defensive protein of the organism. **purine ~** A derivative of uric acid, as, xanthine.

body (1) The trunk of an animal or plant. (2) The largest part of an organ. (3) The consistency or viscosity of a liquid. (4) A limited portion of matter. (5) The strength of a liquid; as, wine. **black ~** See *Stefan-Boltzmann equation, black body*.

b. fluids See *blood, lymph*. **b. tube** The portion of the microscope which carries the objective, and inside which slides the draw tube.

boehmite $AlO \cdot OH$. A form of bauxite.

Boerhaave, Herman (1668–1738) Dutch pioneer of modern chemistry, noted for his textbook.

bog A marsh or morass. **b. berry** The fruit of *Vaccinium oxycoccus*, cranberry. **b. butter** Butyrelite. A soft mineral occurring in marshes. **b. iron ore** Bogore. **b. manganese** Wad. **b. ore** Bogore.

Bogert, Marston Taylor (1868–1957) American chemist, noted for his work on organic synthesis.

boghead A carbonaceous rock, or cannel with a high iron carbonate content. **b. naphtha** Photogen.

bog iron ore Bogore.

bog manganese Wad.

bogore $2Fe_2O_3 \cdot 3H_2O$. Bog iron ore, marsh ore, brown iron ore, brown hematite, brown ocher, limonite. A hydrous ferric oxide with some ferrous carbonate, from marshy places; a source of iron.

Bohr, Niels (1885–1962) Danish physicist; Nobel prize (1922) for his theory of atomic structures. **B. atom** A hypothesis of *atomic* structure, q.v.; the electrons move in circular or elliptical orbits around a positive nucleus, resembling a very small solar system. **B. magneton** See *magneton*. **B. radius** The radius of the ground state orbit of the hydrogen atom, $a_0 = 5.29177 \times 10^{-11}$ m. **B. theory** Spectrum lines are produced (1) by emission of radiation (energy) when electrons drop from an orbit of greater to lower energy (energy levels); or (2) by absorption of radiation (energy) when the electrons move from an orbit of lower to higher energy. Cf. *quantum, spectrum series, Stoner quanta, correspondence principle*.

boil Quick ebullition or vaporization of a liquid by heat and/or low pressure.

boiled oil Linseed oil which has been heated to 210–260°C and thereby hardens more readily; used in varnishes and lacquers.

boiler An open or closed vessel for evaporating liquids, cooking food, or generating steam. **vacuum ~** A closed b. in which evaporation of a liquid is caused by low pressure, with or without heat.

b. compound A substance used to prevent the formation of b. scale. Cf. *water softening*. **b. fluid** A solution which prevents the formation of a compact b. incrustation. **b. incrustation** The insoluble mass, deposited on the sides of a vessel in which hard water has been evaporated, of calcium and magnesium carbonates and sulfates. **b. mud** A loose deposit of b. incrustations. **b. scale** A compact, thick layer of successive deposits. **b. stone** B. scale.

boilers Group name for nitrocellulose and lacquer *solvents*, q.v., arranged in order of their boiling points. **low ~** B. below 100°C. **medium ~** B. near 125°C. **high ~** B. from 150–200°C.

boiling The state of ebullition, the brisk change from the liquid to the vapor state.

boiling point B.p., b. The temperature at which, under a specified pressure, a liquid is transformed into a vapor; i.e., at which the vapor pressure of the liquid equals that of the surrounding gas or vapor. Cf. *Clapeyron equation*. **b. p. apparatus** A device to determine the b.p. of a liquid under a definite pressure. **lowering of b. p.** The decrease in pressure from lowering the b.p.; e.g., by lowering the pressure 10 mm, water will boil 0.37°C lower. **b. p. elevation** The raising of the b.p. of a liquid because of the presence of a dissolved substance. The rise is a function of the substance's molecular weight and may be used to determine it; 1 mole/liter in water causes a rise of 0.51°C. Cf. *Raoult's Law, Beckmann apparatus*.

Boisbaudran, Paul Émile Lecoq de (1838–1912) French scientist, discoverer of gallium, samarium, and dysprosium.

boldine $C_{19}H_{21}NO_4$ = 327.4. An alkaloid from the leaves of *Peumus boldus* (Monimiaceae). Gray powder, insoluble in water. Cf. *laurotetanine*.

boldoglucin $C_{30}H_{53}O_8$ = 541.7. A glucoside from the leaves of *Peumus boldus*. A thick syrup.

bole (1) A fine clay, colored by iron. (2) The trunk or stem of a tree. (3) A measure of corn; 6 bushels. **red ~** Ocher. **white ~** Kaolin.

boleite A native hydrous oxychloride of lead, silver, and copper, blue crystalline masses (Boleo, lower California).

Boletus A genus of edible fungi or mushrooms (Basidiomycetes).

Bologna phosphorus Luminescent barium sulfide.

bolometer A device for measuring minute quantities of radiant heat from the change in the conductivity of a black body.

Boltaflex Trademark for a mixed-polymer synthetic fiber.

bolting cloth A fabric of unsized silk, used for sieves.

boltonite Mg_2SiO_4. A native variety of fosterite.

Boltzmann **B. constant** $k = 1.3807 \times 10^{-23}$ J/K. The gas constant, R, divided by the Avogadro constant. Cf. *Maxwell-B. distribution law*. **B. equation** See *molecular free path*. **B. law** The law of equipartition of energy: The total kinetic energy of a system, due to translation, rotation, vibration, etc., is equally divided among all the degrees of freedom. The energy per degree of freedom is 0.5 RT per gram molecule.

bolus (1) Masticated food ready to be swallowed. (2) Kaolin. (3) A small, rounded mass.

bomb (1) A projectile of iron or steel filled with a nuclear device, or explosive, poisonous, or incendiary substances; may be used in chemical warfare. (2) A heavy iron tube containing